

We claim:

1. A security gate operating mechanism, comprising:

5 a drive mechanism arm having a first end and a second end, and including a security gate attachment member connected to the first end of the drive mechanism arm;

 a drive mechanism actuator operatively connected directly or indirectly to the drive mechanism arm and adapted to move the drive mechanism arm along a predefined path in relation to the actuator in response to operation of the actuator;

10 a release mechanism adapted to release the connection of the security gate attachment member to the first end of the drive mechanism arm in response to the application of a force to the security gate attachment member in a direction other than the force applied to the security gate attachment member by the drive
15 mechanism arm in response to the operation of the actuator to move the security gate drive mechanism arm along the predefined path.

2. The apparatus of claim 1 wherein the actuator is a linear motion actuator and is connected directly to the drive mechanism arm.

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3. The apparatus of claim 1 wherein the actuator is a rotary motion actuator and is indirectly connected to the drive mechanism arm.

4. A security gate operating mechanism, comprising:

25 a security gate drive arm having a first end and a second end, with the first end pivotally attached to the security gate at a pivot point, having a pivot axis, by a pivotal attachment member;

 a drive mechanism connected to the drive arm and adapted to drive the drive arm for movement of the pivot axis through an arc of movement of the security gate through the application of a force to the security gate by the drive arm generally in a plane perpendicular to the pivot axis and generally aligned with a tangent to the arc of swinging movement of the pivot point at any given point of swinging movement of the security gate;

30 a breakaway mounting, included as part of the pivotal attachment member
35 and responsive to application of a force either outside of the swinging plane or unaligned with the tangent of the arc of swinging movement of the pivot point at

- any given point of swinging movement of the security gate, adapted to disconnect the security gate drive arm from its attachment to the security gate; and,
a security gate drive arm retractor connected to the security gate drive arm, having a retractor mechanism, and responsive to the disconnection of the security gate drive arm from its connection to the security gate, adapted to retract the security gate drive arm.
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5. The apparatus of claim 4, further comprising:
a drive mechanism interconnect connecting the security gate drive arm
10 directly or indirectly to the drive mechanism;
a disconnecting mechanism forming a part of the drive mechanism interconnect and, responsive to the disconnect of the security gate drive arm from its connection to the security gate, adapted to disable the application of driving force to the security gate drive arm by the driving mechanism, allowing the drive
15 arm retractor mechanism to retract the drive arm.
6. The apparatus of claim 5 wherein the drive arm retractor mechanism includes a spring attached directly or indirectly to the drive arm.
- 20 7. The apparatus of claim 5 wherein the drive arm retractor includes at least one switch adapted to remove the driving force from the security gate drive arm and allow retraction of the security gate drive arm.
8. The apparatus of claim 5 wherein the drive mechanism includes a threaded shaft.
25 having a drive carriage, threadably mounted thereon, for movement along the threaded shaft in response to rotation of the threaded shaft, in operative connection with the security gate drive arm.
9. The apparatus of claim 5, wherein the drive mechanism includes a chain drive
30 having a sprocket driven in a rotary motion about a sprocket pivot axis, and drivingly attached to a sprocket in operative connection with the security gate drive arm.
10. The apparatus of claim 5 wherein the drive mechanism is a threaded screw.
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11. The apparatus of claim 5 wherein the drive mechanism is a chain drive.

12. The apparatus of claim 5 wherein the drive mechanism is a hydraulic piston.

13. A security gate operating mechanism, comprising:

5 drive means, including a drive arm, having a first end and a second end, and including a security gate attachment member connected to the first end of the drive means arm;

 drive means actuating means, operatively connected directly or indirectly to the drive means arm, for moving the drive means arm along a predefined path in
10 relation to the actuating means in response to operation of the actuating means;

 releasing means for releasing the connection of the security gate attachment member to the first end of the drive means arm in response to the application of a force to the security gate attachment member in a direction other than the force applied to the security gate attachment member by the drive means arm in response
15 to the operation of the actuating means to move the security gate drive means arm along the predefined path.

14. The apparatus of claim 13 wherein the actuating means is a linear motion actuator and is connected directly to the drive means arm.

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15. The apparatus of claim 13 wherein the actuating means is a rotary motion actuator and is indirectly connected to the drive means arm.

16. A security gate operating means, comprising:

25 a security gate drive arm having a first end and a second end, with the first end pivotally attached to the security gate at a pivot point, having a pivot axis, by a pivotal attachment member;

 a drive means connected to the drive arm for driving the drive arm for movement of the pivot axis through an arc of movement of the security gate
30 through the application of a force to the security gate by the drive arm generally in a plane perpendicular to the pivot axis and generally aligned with a tangent to the arc of swinging movement of the pivot point at any given point of swinging movement of the security gate;

 breakaway mounting means, included as part of the pivotal attachment
35 member and responsive to application of a force either outside of the swinging plane or unaligned with the tangent of the arc of swinging movement of the pivot

point at any given point of swinging movement of the security gate, for
disconnecting the security gate drive arm from its attachment to the security gate;
and,

5 security gate drive arm retractor means connected to the security gate drive
arm, having a retractor mechanism, and responsive to the disconnection of the
security gate drive arm from its connection to the security gate, for retracting the
security gate drive arm.

10 17. The apparatus of claim 16, further comprising:
drive means interconnect means connecting the security gate drive arm
directly or indirectly to the drive means;
disconnecting means forming a part of the drive means interconnect means,
for, responsive to the disconnect of the security gate drive arm from its connection
to the security gate, disabling the application of driving force to the security gate
15 drive arm by the driving means, allowing the drive arm retractor means to retract
the drive arm.

20 18. The apparatus of claim 17 wherein the drive arm retractor means includes a
spring attached directly or indirectly to the drive arm.

19. The apparatus of claim 17 wherein the drive arm retractor means includes at
least one switch adapted to remove the driving force from the security gate drive
arm and allow retraction of the security gate drive arm.

25 20. The apparatus of claim 17 wherein the drive means includes a threaded shaft
having a drive carriage, threadably mounted thereon, for movement along the
threaded shaft in response to rotation of the threaded shaft, in operative connection
with the security gate drive arm.

30 21. The apparatus of claim 17, wherein the drive means includes a chain drive
having a sprocket driven in a rotary motion about a sprocket pivot axis, and
drivingly attached to a sprocket in operative connection with the security gate drive
arm.

35 22. A method of operating a security gate, comprising:
driving the security gate with a drive arm, having a first end and a second

end, and including a security gate attachment member connected to the first end of the drive arm;

5 actuating the drive arm by operatively connecting the drive arm directly or indirectly to an actuating mechanism, and moving the drive arm along a predefined path in relation to the actuating mechanism in response to operation of the actuating mechanism;

10 releasing the connection of the security gate attachment member to the first end of the drive means arm in response to the application of a force to the security gate attachment member in a direction other than the force applied to the security gate attachment member by the drive arm in response to the actuation of the drive arm to move the security gate drive arm along the predefined path.

15 23. The method of claim 22 wherein the step of actuating is done with a linear motion actuator connected directly to the drive means arm.

24. The apparatus of claim 22 wherein the step of actuating is done with a rotary motion actuator indirectly connected to the drive means arm.

25. A method of operating a security gate, comprising:

20 driving the security gate with a security gate drive arm having a first end and a second end, with the first end pivotally attached to the security gate at a pivot point, having a pivot axis, by a pivotal attachment member;

25 actuating the drive arm by driving the drive arm for movement of the pivot axis through an arc of movement of the security gate by the application of a force to the security gate by the drive arm generally in a plane perpendicular to the pivot axis and generally aligned with a tangent to the arc of swinging movement of the pivot point at any given point of swinging movement of the security gate;

30 disconnecting, responsive to application of a force to the drive arm, either outside of the swinging plane or unaligned with the tangent of the arc of swinging movement of the pivot point at any given point of swinging movement of the security gate, the security gate drive arm from its attachment to the security gate; and,

35 retracting the security gate drive arm, responsive to the disconnection of the security gate drive arm from its connection to the security gate.

26. The method of claim 25, further comprising:

providing a drive interconnect connecting the security gate drive arm directly or indirectly to the drive means;

- responsive to the disconnect of the security gate drive arm from its connection to the security gate, disabling the application of driving force to the
- 5 security gate drive arm, allowing the retraction of the drive arm.